

TITLE OF THE INVENTION

EASILY PREPARED BOX WITH POCKET FOR ILLUSTRATIVE
LEAFLET

FIELD OF THE INVENTION

5 The present invention relates to a box formed from a single piece of punched and crease-lined cardboard and defining in its interior a pocket into which a leaflet is inserted illustrating that product which is housed and preserved in the box.

BACKGROUND OF THE INVENTION

10 The term "illustrative leaflet" means any sheet, possibly folded several times on itself, with descriptions and instructions relative to the product preserved in the box, the leaflet being able to be extracted from the box and again inserted into it by the person who wishes to consult it.

15 Many types of boxes are known formed from a single piece of punched and crease-lined cardboard and having an inner pocket into which the box manufacturers directly insert an illustrative leaflet during production of the boxes, into which the firms preparing and using the boxes have later merely to insert the products which they
20 are intended to contain (for example bottles or packs of pharmaceutical products).

25 Boxes of this known type comprise at least six main walls, separated from each other by parallel crease lines about which these walls are folded to form boxes having a quadrilateral cross-section with four outer main walls and at least two inner main walls, of which

at least one is spaced from the outer wall facing and parallel to it, to form therewith the pocket for housing the illustrative leaflet.

DESCRIPTION OF RELATED ART

GB-A-2277077 (Figures 3 and 4) and DE-A-3208777 (Figure 5 2) describe boxes formed from six main walls in which an outer wall is glued to an inner wall from which there projects another inner wall which is free to rotate within the box and which defines (with that outer main wall facing it) a pocket for housing a leaflet.

US-A-3147856 (Figure 3), EP-A-0911266 (Figure 2) and DE 10 8618368U (Figure 2) describe boxes formed from seven main walls, in which an inner wall is parallel to and spaced from an outer wall to form therewith a pocket, this inner wall being flanked, on each of its longitudinal sides, by another two inner walls which are glued to the outer walls to which they are adjacent.

15 EP-A-1219542 (Figures 7 and 8) illustrates a box, also comprising seven main walls, of which three are internal to the box: the end inner wall and that adjacent to it are free (and define a corner pocket housing an illustrative leaflet folded at a right angle on itself and positioned in correspondence with a longitudinal edge of 20 the box), the other inner wall being glued to that outer wall superposed on it.

WO 00/20289 also describes a box having seven main walls and defining a pocket which is accessible from the outside of the box, even when closed.

25 All the boxes referred to above are formed from outer and inner main walls which have to be folded one onto another (along the

crease lines which separate one wall from another) by the box manufacturer, some crease lines which separate inner walls from each other being adjacent to crease lines which separate their facing outer walls along edges of the box at which two consecutive adjacent 5 inner walls face corresponding inner walls: as a cardboard sheet folded on itself along a crease line provided in it tends to "open" elastically, i.e. to return towards its original extended or flat position, and as the boxes are produced by automatic machines which operate at high speed, it is obvious that the resistance presented by 10 the cardboard sheet to being folded on itself along a crease line and the tendency to rapidly return to its extended position constitute a serious problem which results, *inter alia*, in a slowing down of the speed of such box production machines. This phenomenon is more important when the box is folded along edges at which separation 15 crease lines between outer walls and respectively between inner walls are superposed or adjacent, as happens when the boxes are of the type having an inner pocket housing an illustrative leaflet.

It is also very important to note another fact. When the boxes have been produced and have the illustrative leaflet inserted into the 20 pocket of each box, these boxes, already glued where necessary but with the two ends or end lids open and spread out substantially in the plane in which the box outer and inner walls extend (i.e. with the box compressed or flattened on itself about opposing box crease lines), they are superposed one on another to form piles or packs of 25 flattened boxes which are despatched in that state to the firms which use and prepare the finished box. These firms, again using

automatic machines operating at high speed, take each individual box and deform it (then closing its lower lid, then inserting into the box the product which it is intended to contain, and finally closing the upper lid) so that the outer consecutive walls of the box (and likewise 5 the inner walls) form a right angle between them, i.e. such that the box cross-section becomes substantially square or rectangular. To achieve this, the machines press against two opposing edges of the flattened box to cause them to approach each other, and at the same time causing the cardboard sheet to fold about those crease 10 lines lying between said opposing edges. As, also in this case, the cardboard sheet presents a non-negligible resistance to being changed rapidly from its flattened position to the "folded" position which it has to assume in the final prepared box, and as the cardboard sheet tends elastically to return towards the flattened 15 position which it had been made to assume by the box manufacturer, it is often necessary to rotate the various box walls about the crease lines which separate them from the consecutive walls adjacent to them by more than the 90° (which they must have and preserve in the final prepared boxes), to be then returned to the desired final 20 position or attitude.

All the aforesaid problems derive both from the resistance which the cardboard sheet (used to form the boxes) presents to its folding along the crease lines provided in it, and to the fact that the cardboard sheet tends elastically to return to the position which it 25 had or had been made to assume before being subjected to any further folding.

BRIEF SUMMARY OF THE INVENTION

The main object of the present invention is to provide a box formed from a single piece of cardboard or the like having crease lines such that the cardboard sheet presents, compared with the 5 known art, both a reduced resistance to its folding about said crease lines, and a reduced elastic force tending to return the cardboard sheet already folded about the crease line to its original position.

Another object is to provide a punched and crease-lined cardboard sheet which can be folded about itself with great ease and 10 speed, to form boxes, in particular boxes having an inner pocket for housing an illustrative leaflet or the like.

These and other objects are attained by a box of quadrangular cross-section comprising a plurality of consecutive main walls separated from each other by parallel longitudinal folding lines and in 15 which at least one main wall is glued to the inside of another main wall, and also comprising two lids or panels for closing the two ends of the box and projecting from at least one of the main walls, from which they are separated by transverse crease lines or folding lines perpendicular to said longitudinal folding lines, characterised in that 20 along at least one of said longitudinal folding lines there are provided a plurality or succession of separate aligned cuts.

The invention provides in particular a box in which said main walls are at least six in number, of which four form the outer walls of the box, at least two of which are folded into the box interior, one of 25 the inner walls being glued to an outer wall and at least one other of the inner walls being spaced from that outer wall facing and parallel

to it to form therewith a pocket for housing an illustrative leaflet, characterised in that said cuts are provided at least along those crease lines which are mutually superposed in the outer main walls and respectively in the inner main walls of the finished box.

5 The invention particularly provides a box comprising seven main walls, three of which are folded into the interior of the box about their respective crease lines, one of said inner walls being spaced from the outer wall which faces it, whereas the other two inner walls adjacent thereto and consecutive on one and respectively on the 10 other side of the first stated inner wall are glued to the respective outer walls on which they rest.

Preferably, the cuts provided along those crease lines which separate the inner walls of the box from each other consist of elongate windows or apertures which extend longitudinally along the 15 crease lines themselves.

Again preferably, the cuts provided along those crease lines which separate the outer walls of the box from each other are offset and displaced longitudinally with respect to the cuts provided along those crease lines which separate the inner walls of the box from 20 each other.

Finally, the invention also relates to the punched and crease-lined sheets usable for forming the boxes having the aforesaid characteristics.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE
25 DRAWINGS

The structure and characteristics of the present invention will be more apparent from the ensuing description of an embodiment of a box given by way of non-limiting example with reference to the accompanying drawings, in which:

5 Figure 1 represents a flat punched, crease-lined and knurled cardboard sheet usable for forming the box;

Figures from 2 to 4 represent the same cardboard sheet in its successive folding stages for finishing the box;

10 Figure 5 is a perspective view of the finished box, shown in its position immediately preceding the insertion thereinto of the product to be preserved in the box; and

Figures 6 and 7 are a cross-section and respectively a longitudinal section through the box, on the lines 6-6 and respectively 7-7 of Figure 5.

15 DETAILED DESCRIPTION OF THE INVENTION

Reference will firstly be made to Figure 1 which shows (seen from that of its two sides which is to remain in the box interior) a flat piece of punched, crease-lined and knurled cardboard, comprising seven consecutive main walls 1-7 separated from each other by respective parallel longitudinal crease lines 8-13. From the two opposing ends of the wall 6 there project panels 14 which are separated from the wall 6 by transverse crease lines 15 perpendicular to the crease lines 8-13 and intended to form the two end lids of the closed finished box.

25 In the wall 6 there is also provided a transverse crease line 16 which extends within an intermediate region between the longitudinal

crease lines 12 and 13 and is prolonged at both ends by short knurled portions 17. From both ends of the walls 5 and 7 there project flaps which are of traditional type and which for simplicity are not numbered.

5 From each end of the main wall 2 there projects a flap 18 which is separated from the wall by a knurling 19, in the wall 2 there being provided a hole 20 the function of which is explained hereinafter.

10 From the drawing it can be seen that the walls 5 and 7 have the same width, which is slightly greater than the width of the walls 1 and 3, the wall 2 being slightly narrower than the wall 6.

The cardboard sheet described up to this point is of already known shape or structure.

15 The fundamental characteristic of the cardboard sheet according to the invention is the fact that along one or more of the crease lines 8-13 there are provided a plurality or succession of cuts which pass through the cardboard sheet in correspondence with the cuts.

20 In the embodiment shown in the drawings, along the crease lines 12 and 13 there are provided a succession of thin elongate cuts, whereas the crease lines 8 and 9 are interrupted by cuts 22 in the form of apertures or windows elongate in the direction of the crease lines. The cuts 21 are offset from the windows 22 so that, when the box is prepared as explained hereinafter, the windows 22 and cuts 21 are not mutually superposed: this characteristic is

preferred to prevent dust or the like being able to penetrate into the prepared and closed box.

It should also be noted that the windows 22 could be replaced by or consist of simple longitudinal cuts (such as those indicated by 5 the number 21), but for those longitudinal crease lines to be positioned in the box interior the windows are preferable to cuts.

It will now be assumed that the cardboard sheet of Figure 1 is to be used to prepare a box.

The walls 1 and 2 are firstly rotated onto the walls 3 and 4 by 10 folding the cardboard sheet about the crease line 9 and a strip of glue (represented by dots and not numbered for simplicity) is applied to the upward facing surface of the wall 1 (Figure 2), then an illustrative leaflet 23 is rested on the main wall 6, possibly fixing it thereto by a small spot of low tenacity glue (also not shown in the 15 drawing) of the type which enables the illustrative leaflet 23 to be easily detached from the wall 6 when the leaflet is gripped and pulled by two fingers of a person who wishes to extract it from the box to consult it.

The cardboard sheet already partially folded as described, is 20 then folded about the crease line 11 (by which the glue present on the wall 1 fixes the wall 1 to the wall 5) and a strip of glue (also represented by dots and not numbered) is applied to the upwardly facing surface of the wall 3 (Figure 3), after which the wall 7 is turned (by rotating it about the crease line 13) onto the wall 3 (Figure 4), on 25 which it is fixed by the layer of glue already present on the wall 3.

At this point (i.e. with the box as shown in Figure 4) the box production is complete: the boxes obtained have a "flattened" form, with some of the various adjacent or "compressed" walls being coplanar with and others parallel to the closure panels 14 and flaps 5 18 respectively.

The boxes "flattened" in this manner are superposed on each other to form piles or columns of boxes are despatched by the manufacturer to the box user. This latter, to prepare the box (which still has the attitude shown in Figure 4), uses known automatic 10 machines operating at high speed to exert an approaching pressure between the crease lines 11 and 13 (so that the walls 1, 5; 3, 7 become perpendicular to the walls 2, 6; 4) and closes the closure panel or lower lid of the box, which thus assumes the attitude shown in perspective view in Figure 5 and in section in Figures 6 and 7. 15 Under these conditions the user firm can easily insert into the box the product which the box is to contain, in known manner.

It will be apparent: that the operation of inserting the product into the box is facilitated by the presence of the upper flap 18 (which, like the upper closure panel 14, is slightly folded rearwards, i.e. 20 towards the box exterior), which prevents the product from interfering with the upper edge of the wall 2 or with the illustrative leaflet 23; that the presence of the illustrative leaflet within the box can be easily verified via the hole 20 provided in the wall 2; that extraction of the leaflet 23 from the completed box is made very simple by the fact 25 that after the upper lid of the box has been opened, the panel 14 can be gripped with two fingers and pulled outwards to tear the wall 6

along the knurlings 17 then rotated about the transverse crease line 16, to hence leave the upper portion of the leaflet 23 exposed and easily grippable; and that between the walls 2 and 6 (Figure 6) a pocket is formed for housing the leaflet 23, this pocket having a very 5 stable attitude because of the fact that the inner walls 1 and 3 respectively have a width less than the width of the outer walls 5 and 7 respectively, to which they are glued.

The fundamental characteristic of the described box is the fact that along at least some of its longitudinal crease lines a plurality of 10 thin cuts are provided which all pass through the thickness of the cardboard sheet.

In the embodiment shown in the drawings, a plurality of cuts 15 21 are provided along both the crease lines 12 and 13 (which are to remain on the outside of the finished box), whereas in the crease lines 8 and 9 the cuts are widened and take the form of elongate windows 22 (which are to remain in the interior of the finished box), but it should be noted that these windows could also be simple cuts, 20 such as those indicated by the number 21.

To prevent dust or the like from penetrating into the finished 25 box, the cuts 21 are offset or displaced longitudinally with respect to the windows 22, so that when the crease line 12 is superposed on the crease line 8 and, respectively, the crease line 13 is superposed on the crease line 9 in the finished and prepared box, the cuts 21 are not superposed on the windows 22.

A preferred embodiment of the box has been described in 20 detail, however it is apparent that the cuts and/or windows could be

provided along only some or all of the longitudinal crease lines of the box.

The presence of the cuts 21 and/or windows 22 is essential to provide the box with good machine workability both during its 5 production and during its preparation: in this respect, these cuts or windows (especially if provided along those longitudinal crease lines of which, in the finished box, two crease lines are mutually superposed) greatly reduce both the folding resistance of the cardboard sheet along those crease lines where the cuts are 10 provided, and the tendency of the cardboard sheet to return elastically to its position before being folded along these crease lines, with considerable advantages especially to the box user.